

# **Ribbon Technology International**

**We grow silicon ribbons.**

David Mark

(916) 923-6275

[ribbontech@sbcglobal.net](mailto:ribbontech@sbcglobal.net)

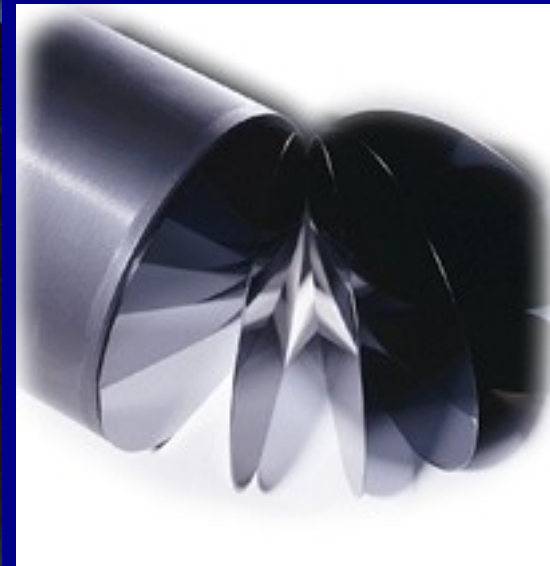
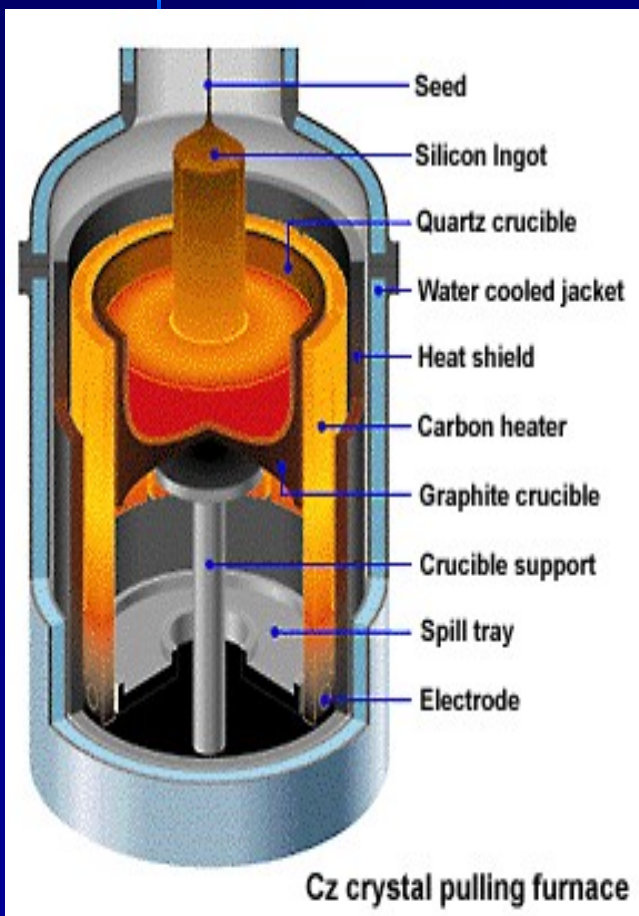


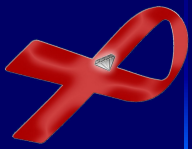
# Market Growth

- Wafer Market 40% growth 2004 to 2005
- Polysilicon feedstock usage up 55% in 2004
- Feedstock rising from \$24/kg to \$50/kg
- Demand exceeding supply
- Less waste, thinner wafers, greater efficiency needed



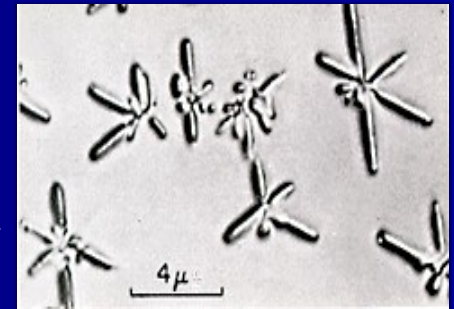
# Current Process





# Problem - Current Silicon Wafer Production Process:

- Up to 78% Material Waste
- Damage to wafer surface
- Substantial chemical usage
- Unnecessarily thick wafers used
- Inconsistent electrical properties
- Crystal defects
- Less waste, thinner wafers, greater efficiency needed





# RTI Management Team

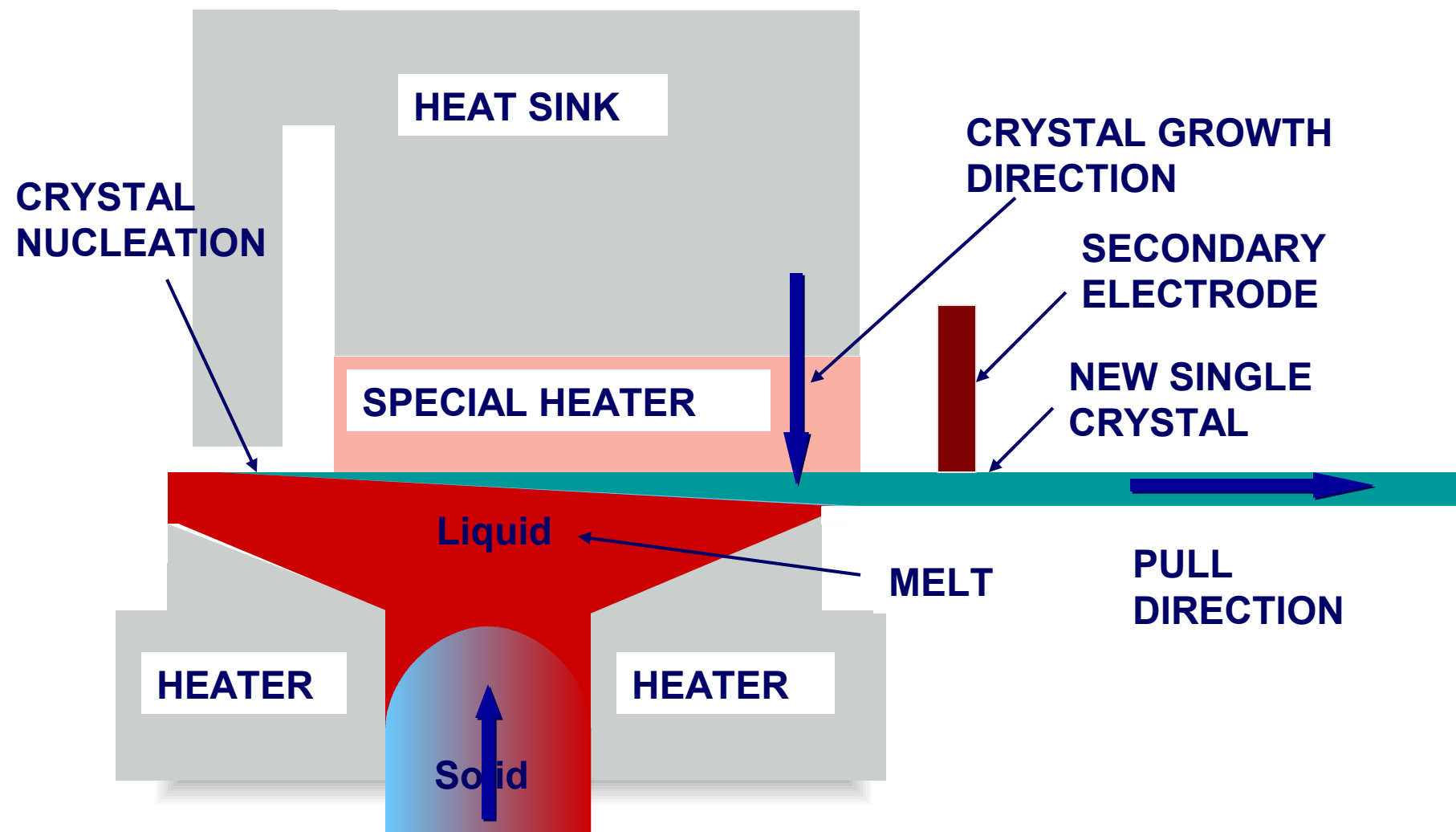
- Ted Belden – Chief Executive Officer
- Carl Bleil – Chief Scientist and Inventor
- David Mark – Chief Operating Officer
- Mike Dickey – Chief Financial Officer

## Advisory Board

- Ted Ciszek – NREL Si Expert
- Jeff Derby – Crystal Growth Expert
- Vaughn Akins – Factory Automation Expert



# Our Process Schematic





# Solution: RTI Method

- **RTI** method:
  - Continuous Ribbon Production, 24/7
  - Grow at thickness of final wafer
  - Waste < 10% versus 70%+
  - Reduced environmental burden
  - Consistent material properties, fewer defects
  - Efficient use of scarce feedstock
- Patented technology: 6 issued, 10 possible
- Production Cost = \$.22 per watt
- Market Selling Price = \$1.15 per watt



# Business Model/Market

## Two Primary Markets

- Direct sales to solar market (\$1.2 billion)
  - 30% annual market growth (65% last year)
  - Target customers include: GE Solar (AstroPower), Shell Solar, and SunPower
- Direct sales to electronics industry (\$8.2 billion)
  - 7% annual market growth
  - Market superior quality of product
- License Technology
  - PV, Electronics, Ceramics, Glass Industries





# Competition - Solar

- Reclaim
- Existing wafer manufacturers
  - PV Crystalox (Germany, UK)
  - Scanwafer (Norway)
  - Duetsche Solar (Germany)
- Vertically Integrated Companies
  - Kyocera (Japan)
  - BP (USA)
  - Shell Solar (USA)
  - Photowatt (France)
- Competing PV Technologies
  - Polycrystalline, Thin films, amorphous  
(Evergreen, RWE Schott, Miasole', Nanosolar, Konarka)



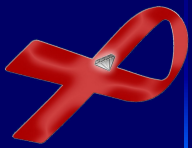
# Competition - Electronics

- Existing wafer manufacturers
  - SHE (Japan)
  - Sumitomo Mitsubishi Silicon Corp (Japan)
  - MEMC Electronics (US)
  - Wacker Siltronic (Germany)
  - Komatsu
  - Toshiba
  - LG Siltronic
  - Topsil (Netherlands)



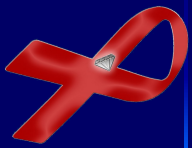
# Accomplishments

- Status:
  - Lab size processor built and operated.
  - Single crystal structure proven
  - 6 patents awarded
  - Concept proven



# Financial Projections and Key Metrics

- Profitable by year 3
- Sales: year 2: 20,000 m<sup>2</sup> \$ 1 million
  - year 3: 135,000 \$ 16
  - year 4: 374,000 \$ 115
  - year 5: 700,000 \$ 345
- Net Income
  - year 3: \$ 6 million
  - year 4: \$ 73
  - year 5: \$ 212



# Use of Funds

## ■ Round 1

- Set up prototype manufacturing facility
- Assemble commercial scale prototype
- Hire staff
- Obtain additional IP Protection
- Initiate Sales to PV market

## ■ Round 2

- Set up production facilities
- Expand marketing staff
- Assemble multiple processors
- Initiate Sales to Electronics customers



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COO

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707 Commons Drive #240

Sacramento, CA 95825